

# KNOWLEDGE TRANSLATION

## BASIC THEORIES, APPROACHES AND APPLICATIONS



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***“We don’t receive wisdom: we must discover it for ourselves after a journey that no one can take for us or spare us.”***

Marcel Proust

While the need for policy decisions to be based on sound evidence has widely been acknowledged, the relationship between researchers and decision makers remains, in many circumstances, characterized by mutual tensions and misunderstandings. The idea of two distinct communities, which Nathan Caplan coined in 1979 to describe the gap between these two groups of actors, is indeed still being used today.

Research and evidence, however, can have an immense impact on policy and practice, resulting in tangible positive outcomes. In the field of health, for example, successfully incorporating evidence into practice can save millions of lives. Take the case of the Free State province of South Africa, where researchers were invited to collaborate with the Department of Health in the conception and implementation of the Comprehensive Care and Treatment Program (which includes the provision of free anti-retroviral treatment). Not only did researchers provide timely and important information to health officials, but they also designed various aspects of the implementation process, or ARV rollout. Concretely, this has resulted in evidence-based decisions that have led to more effective policies and interventions.<sup>1</sup>

The following document presents an overview of recent approaches and strategies aimed at increasing the linkages between research and decision making processes. It looks both at the basic theories of, and approaches to, knowledge translation, as well as at its applications, with a particular emphasis on the health sector.

### WHAT DOES KT STAND FOR?

While the idea of bridging the gap between the “two communities” is not new, the term knowledge translation (KT) itself is a rather recent arrival to the field. Currently, the [Canadian Institute of Health Research’s](#) definition of the process is the one most commonly used, albeit with some variations. Accordingly, KT can be defined as **“the**

<sup>1</sup> For more information on the Free State experiences, see for example Doherty, et al. 2005. Implementing the “Comprehensive Care and Treatment Programme for HIV and AIDS patients in the Free State: Sharing Experience.” *Conference Report*. Durban: Health Systems Trust. Available at [www.hst.org.za/publications/677](http://www.hst.org.za/publications/677).

***exchange, synthesis and ethically-sound application of research findings within a complex set of interactions among researchers and knowledge users. In other words, knowledge translation can be seen as an acceleration of the knowledge cycle; an acceleration of the natural transformation of knowledge into use.*** Within the context of health research, KT therefore aims to *“to accelerate the capture of the benefits of research...through improved health, more effective services and products, and a strengthened health care system”* (CIHR, 2004).

As such, KT goes beyond mere dissemination or diffusion. It is an on-going and iterative process and strategy that requires the active and conscious participation of both researchers and research-users, and is based on the basic principles of integration and simplification (Choi, 2005).

### WHY IS KT IMPORTANT? WHAT IS THE OBJECTIVE?

KT emerged in response to the gap between evidence-based research and its use/implementation by various stakeholders. Change in behaviour is usually the ultimate goal, but in practice the impact of KT is often much more subtle and long-term.

For Jonathan Lomas (2000), ***“bringing decision makers who can use the results of a particular piece of research into its formulation and conduct is the best predictor for seeing the findings applied”*** (237).

### WHERE DOES IT COME FROM?

While the ‘knowledge translation’ label itself emerged in the past decade, the idea of bridging the gap between research and policy can be traced back at least to the mid 20<sup>th</sup> century. Gradually, social scientists started studying the policy-making process in an attempt to increase the uptake and use of their research by decision-makers, who themselves expressed more interest in obtaining research results that they could use. Carol H. Weiss was among the first writers to formally address the issue, and her work on the various meanings of ‘research utilization’ is still relevant (Weiss, 1979). Since then, there has been an increasing interest in the field, and various individuals or organisations have attempted to conceptualise the basic concepts.

### WHERE ARE WE NOW?

A quick review of the literature reveals that various organisations and individuals use different terms to refer to similar concepts. The process of linking research to policy has at times been referred to as ‘knowledge utilization’, ‘knowledge dissemination’, ‘knowledge brokering’, ‘knowledge transfer’, ‘knowledge exchange’, and more.

While some use these terms interchangeably, there are some key differences that are worth highlighting. First, there is a clear **distinction between KT and knowledge transfer** when the latter refers to a linear process through which research is first

conceptualised and conducted, and the results are then handed over to the end-users. The unidirectional nature of knowledge transfer has been criticized and recent studies have demonstrated that such strategies “have not proven to be effective in encouraging the adoption and implementation of new research results...The mere reception of knowledge by the potential user does not imply its ‘use’” (Landry, Lamari and Amara, 2001). As a result, and reflecting the general trend towards increased interactions between researchers and users, knowledge transfer strategies increasingly incorporate active processes and interactive engagement and exchange (Lavis et al., 2003). In terms of **knowledge brokering**, the [Canadian Health Service Research Foundation](#) (CHSRF) refers to “the human forces behind knowledge transfer...it helps build relationships and networks for sharing existing research and ideas and stimulating new work.” Knowledge brokering supports evidence-based decision-making by encouraging the connections that ease knowledge transfer (CHSRF, 2003). The term therefore refers to the active process rather than to the general concept/idea. The distinction between these two concepts and KT is murky at times, but the key element is whether or not what is being referred to is an interactive and engaged process, or rather a linear and unidirectional transfer of information.

## WHAT MODELS ARE USED TO EXPLAIN THE PROCESS?

Although there is little consensus on what research ‘use’ refers to exactly, there seems to be a broad agreement on the fact that research evidence rarely has a direct impact on decision making. The influence of research evidence is much more indirect and incremental, and tends to occur through a process of ‘creeping’, where background assumptions and the concepts that frame discourse are gradually transformed (Porter R.W. and Irwin Hicks, 1995). The following section offers a brief overview of selected knowledge utilization models.

- **Weiss, Carol H. 1979. “The Many Meanings of Research Utilization,” *Public Administration Review*, 39 (5): 426-431.**

Weiss provides a useful roadmap to the various meanings of research utilization, which he defines as the use of social science research in the sphere of public policy.

1. **Knowledge-Driven Model** (linear): New research findings lead to new applications and new policies. The existence of knowledge is seen to lead directly to its use;
2. **Problem-Solving Model** (linear): direct application of results to solve a problem that was previously identified by the ‘user’;
3. **Interactive Model**: policy-makers seek information from a variety of sources, including social scientists, and the process of decision-making and research-to-policy dynamics involves interconnectedness and multiple-way exchanges;
4. **Political Model**: constellations of interests or opinions predetermine the positions of policy makers, and research is used as ammunition to support these positions;

5. **Tactical Model:** research is not being used for its content, but rather the fact that it is being done is used by policy makers when pressed to take action on a particular issue;
  6. **Enlightenment Model:** concepts and theoretical perspectives that social science research has engendered permeate the policy-making process.
- **Nutley, S., Walter, I., Davies, H. 2003. “From Knowing to Doing.” *Evaluation*, 9 (2): 125-148.**

In an adaptation of Weiss’ classification, Nutley, Walter and Davies identify four main types of research utilization:

1. **Instrumental:** research feeding directly into decision-making (this is the least common outcome, and is more likely when findings are non-controversial and require little change or support the status-quo);
2. **Conceptual:** change in decision-makers’ understanding of a situation, even if the findings themselves don’t lead to a change in policy;
3. **Mobilization of support:** research as an instrument of persuasion;
4. **Wider influence:** beyond the institutions and events being studied (by influencing, for example, policy paradigms or belief communities).

These authors also identify two main process models:

1. **Research into practice** – the evidence is external to the world of stakeholders, this is a unidimensional, linear and logical process (the underlying assumption being that if an idea/finding is good enough, it will be used);
  2. **Research in practice** – evidence generation and professional practice are much more closely involved, the gap between the “two-communities” is effectively being bridged. Research is now conceptualised as a learning process. In this context, “change initiatives need to be considered in relation to the heterogeneous framework of political power, agency interests and professional knowledge in which they are embedded” (Nutley, Walter and Davies, 2003; 133).
- **Lavis et al. 2003. “How Can Research Organizations More Effectively Transfer Research Knowledge to Decision Makers?” *The Milbank Quarterly*, 81 (2): 221-248.**

The authors also propose a classification of the different ways in which research is or can be used:

1. **Instrumental:** when research is acted upon in specific and direct ways, i.e. to solve the problem at hand;
2. **Conceptual:** more general and indirect form of enlightenment;

3. **Symbolic:** to justify a position or course of action taken for reasons that have nothing to do with the research findings ('political use'), or use the fact that research is being done to justify inaction on other fronts ('tactical use').

For Lavis et al., effectiveness is judged in terms of the impact that research findings are having on decision-making processes, and not on the impact in terms of health, economic and social outcomes.

- **Davis et al. 2003. "The Case for Knowledge Translation: Shortening the journey from evidence to effect." *British Medical Journal*, 327: 33-35.**

Knowledge translation is seen as a holistic concept that focuses on health outcomes and changes in behaviour, and interventions are seen to work in function in three ways:

1. To predispose to change by increasing knowledge or skills;
2. To enable the change by promoting conducive conditions in the practice and elsewhere;
3. To reinforce the change, once it is made.

They further develop their model of KT (which by their own admission is still intuitive and untested) and see a continuum from intervention to awareness to agreement to adoption to adherence.

- **Knott, J., and A. Wildavsky. 1980. If dissemination is the solution, what is the problem? *Knowledge: Creation, Diffusion, Utilization* 1:537-78.**

The Knot and Wildavsky stages of knowledge utilization are still being used to explain how research evidence reaches the policy level, where utilization is seen as process rather than a one-time transfer. Accordingly, these stages are:

1. **Transmission** – results were transmitted to practitioners and professionals;
2. **Cognition** – findings were read and understood;
3. **Reference** – findings cited as a reference by stakeholders;
4. **Effort** – efforts made to adopt results;
5. **Influence** – results influences choices and decisions;
6. **Application** – search led to applications by stakeholders.

- **Landry, R., Lamari, M., Amara, N. "Extent and Determinants of Utilization of University Research in Government Agencies." *Public Administration Review*, 63(2): 193-205.**

The authors use the Knot and Wildavsky framework to explain what factors allow certain researchers to 'climb up the ladder of research utilization'.

They also offer four models of research utilization:

1. **Technological** – push model where supply is the major determinant of uptake;
  2. **Economic** – pull model, where the needs and context of users is the major determinant;
  3. **Institutional dissemination** – Two main determinants: adaptation of research products to meet the needs of stakeholders and the dissemination efforts;
  4. **Social interaction** – favours sustained interactions between researchers and research-users, at all stages of knowledge production, dissemination, and utilization.
- **Hanney et al. 2002. “The utilisation of health research in policy-making : concepts, examples and methods of assessment.” *Health Research Policy and Systems*, 1(2).**

The authors use an ‘interfaces and receptors’ model to provide a framework of analysis of research utilization.

Factors that affect the extent to which research reaches the policy level include models of policy-making, categories of health research, and the interfaces between health research system and policy-makers. Models of policy-making include:

1. **Rational model** (ends-means);
2. **Incrementalist** (‘muddling through’);
3. **Networks** (role of interests and relationships);
4. **Garbage can model** (idiosyncratic approach).

Most writings on KT and decision-making converge on the idea that research can have an impact on three phases of the process, i.e. agenda-setting, policy formulation, and implementation (some also add evaluation). Such a framework, however, tends to be based on the rational model of decision-making, as in reality the distinction between the various phases is a lot murkier.

The **interfaces and receptor model** integrates various key issues, such as:

- A focus on the need for multi-layered analysis;
- An appreciation that both researchers and policy-makers have their own values and interests;
- An emphasis on the role of the receptor;
- An approach that facilitates analysis of the key paradox highlighted by the systematic review.

There is still disagreement over the extent to which researchers should be able to set their own research agenda, free from the influence of funders or policy makers. On the one hand are those that still support Polanyi's (1962) belief that "the best science comes from the freedom of researchers to pursue the priorities that emerge from the scientific imperatives." This is referred to as the 'internalist' view of research. In recent decades, however, and as explained by Kogan and Henkel, there has been a shift towards the belief that "if health research is 'internalist and freely sponsored, the problem for government will be that of securing adequate brokerage with it...because it has not taken part in the setting of problems'" (1983; 14).

## PUTTING KT INTO PRACTICE

The question of how research results can best be brought to influence policy making and practice has led to the development of models to guide the efforts of researchers, decision makers, donors, and more. The two models presented below are for their part mainly targeted at researchers, and seek to enhance their understanding of the dynamics at play.

- **Lavis et al. 2003. "How Can Research Organizations More Effectively Transfer Research Knowledge to Decision Makers?" The Milbank Quarterly, 81 (2): 221-248.**

The authors highlight the determinants that should guide knowledge translation efforts:

1. **Message (WHAT?)** – actionable messages are preferable to single research reports or the results of single studies. "Research on managerial and policy decision making has taught us that research in the form of 'ideas', not 'data', most influences decision-making" (Lavis et al., 2003; 223).
2. **Target Audience (WHO?)** – The types of decisions being made and the types of decision-making environment at hand need to be considered (organisational and political factors cannot be neglected).
  - When selecting a target audience, one should consider who will be able to act on the basis of the research, who can influence those who act, and with which audience can the most success be expected.
3. **Messenger (BY WHOM?)** – the key here is credibility.
4. **Knowledge transfer process and support system (HOW?)** – passive processes are widely recognised as ineffective, and interactive engagement is preferred. Two-way exchanges can, in the long term, produce beneficial cultural shifts.
5. **Evaluation (with what EFFECT should it be transferred?)** – judgements about the success of an initiative depend on the objective: are we looking for a change in behaviour? An increase in awareness? Introduction of the issue into a debate?  
Measures can capture:
  - A process (e.g. a presentation)



- An Intermediate outcome (e.g. a change in awareness, knowledge, attitude)
- An actual outcome (e.g. a decision to select the suggested course of action)

The authors also highlight opportunities for improvement upon current practices, including:

- Developing more and better targeted actionable messages for decision-makers;
- Developing knowledge uptake skills among target audiences;
- Developing knowledge transfer skills within organisations;
- Evaluating the impact of activities (this area is seen as particularly under-explored).

Lavis et al. suggest that research funders “could structure the knowledge transfer requirements for the research organizations they fund in ways conducive to these opportunities. For example, a funder could require research organisations to move beyond transferring reports on research projects to transferring actionable messages based on whole bodies of research knowledge. Such a move could help counter the academic incentives *for* focusing on peer-reviewed publications and against transferring research knowledge to decision makers” (243).

- **Jacobson, N., Butterill D., and Goering, P. “Development of a framework for knowledge translation: understanding user context.” *Journal of Health Services Research and Policy*, 8(2): 94-99.**

The authors developed a generic framework to be used in various contexts by researchers and other disseminators involved in KT, the intention being to increase their familiarity with the intended user group(s).

The framework consists of five domains:

1. **The user group** – context within which the group operates (includes formal and informal structures), morphology, decision-making practices, access to and use of information (purposes, incentives, etc.), experience with KT;
2. **The issue** – its characteristics have an impact on the user group and on the KT process;
3. **The research** – look at what is available, what the user’s preferences are, and how relevant and congruent the research will be to them;
4. **The researcher-user relationship** – early engagement is key to facilitating KT;
5. **The dissemination strategies** – awareness, communication and interaction. Researchers need to consider what strategies will be most effective in light of the other four domains.



## WHO IS DOING WHAT?

- **Canadian Health Services Research Foundation** [http://www.chsrf.ca/home\\_e.php](http://www.chsrf.ca/home_e.php)

The foundation focuses on knowledge transfer and exchange, and on evidence-based management of Canada's health care system (see their role as helping to bridge the 'know-do' gap). Knowledge exchange is defined as *"collaborative problem-solving between researchers and decision makers."*

Their web site makes available various resources for researchers, decision makers and knowledge brokers. For example, they have assembled a guide to knowledge exchange resources to assist applications for research funding and to help decision makers and researchers incorporate knowledge exchange in their work. They have also created short communications notes that address issues such as the development of a dissemination plan, dealing with the media, designing a great poster, giving research presentations to decision-makers, reader-friendly writing, and self-editing, as well as a communications primer.

- **Canadian Institute of Health Research (CIHR)** <http://www.cihr-irsc.gc.ca/>

The institute aims to build capacity for KT of health research in Canada, where KT includes all steps from the creation of knowledge to its application. As such, the scope of its activities includes dissemination, communication, technology transfers, ethical context, knowledge management, knowledge utilization, two-way exchanges between researchers and those who apply knowledge, implementation research, technical assessment, synthesis of results, development of consensus guidelines, etc. Specifically, the CIHR:

- Supports KT research (on concepts and processes);
- Contributes to building KT networks (of researchers and users);
- Strengthens and expands KT at the CIHR;
- Supports and recognizes KT excellence.

According to a study of **research organisations in Canada**, conducted by Lavis et al. (2003), about 1/3 of the surveyed organisations develop messages that are targeted towards their audience that go beyond project reports and summaries. Among this group, many do tailor their knowledge-transfer approach, but fewer actually spend time and money getting to know their target audiences, and even fewer focus on skill building among their audiences.

- **World Health Organization** <http://www.who.int/kms/en/>

KT is defined as *"the exchange, synthesis, and effective communication of reliable and relevant research results. The focus is on promoting interaction among the producers and users of research, removing the barriers to research use, and tailoring information to different target audiences so that effective interventions are used more widely"* (2004).

The WHO acknowledges the need to bridge the 'know-do' gap – this is seen as crucial to achieving the Millennium Development Goals. As such, the organization calls for greater research and research capacity in developing countries and for greater links between research and actions were made at the Ministerial Summit on Health Research in November 2004 and at the World Health Assembly in May 2005. The WHO currently houses a knowledge management team, who's strategy focuses on three main areas: "strengthening country health systems through better knowledge management; establishing KM in public health; and enabling WHO to become a better learning organization."

A forthcoming edition of the WHO *Bulletin* (to be published in the 2<sup>nd</sup> half of 2006) will focus on KT in global health.

(<http://www.who.int/bulletin/volumes/83/10/editorial21005html/en/>)

- **The Cochrane Collaboration** <http://www.cochrane.org/index0.htm>

International network of individuals and institutions committed to preparing, maintaining and disseminating systematic reviews (which are "like scientific investigations in themselves, using pre-planned methods and an assembly of original studies that meet their criteria as 'subjects'. They synthesize the results of an assembly of primary investigations using strategies that limit bias and random error") of the effects of health care. It promotes the results of its reviews (which they see as "unbiased reports of evidence obtained using rigorous methods") as a resource for policy recommendations.

- **Centre for Knowledge transfer** <http://www.ckt.ca/>

This is a national training centre in knowledge utilization and policy implementation in the areas of health services research. They provide training to researchers and students (capacity building) and also engage decision makers. They also aim to increase knowledge transfer skills among managers and professionals.

- **Canadian Coalition for Global Health Research** <http://www.ccghr.ca/>

The Coalition has a 'task group' that focuses on linking research into action. Specifically, they:

- Serve as a "broker, linking providers, funders and users of research to bridge the gap between research production and its practical application, and;
- Promote best practices in translating knowledge into policies, programs and action."

Their activities include:

- Linking researchers with KT experts and building capacity in KT (summer institute, mentoring exchange via web-based discussion);
- Create an inventory of best practices in KT, communicate and make this available to a network and provide a clearinghouse function.

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